Contribution of the private sector to Climate Change Long-Term-Finance: An assessment of private climate finance mobilized by Switzerland

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Final report for the Swiss Federal Office for the Environment

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Disclaimer
This report represents the view of the authors but not necessarily the one of the Swiss Federal Office for the Environment or any of the institutions that provided comments.

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Foreword

According to the UNFCCC COP 16 decision, developed country Parties committed, in the context of meaningful mitigation actions and transparency on implementation, to a goal of mobilizing jointly USD 100 billion per year by 2020 to address the needs of developing countries (adaptation and mitigation). These funds may come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources.

This decision does not specify which financing from private sources is to be counted towards the USD 100 billion commitment. While there are numerous studies that look at the role of private sector finance to mitigate and adapt to the effects of climate change, little has been done to track and analyze the flows of climate finance coming from the private sector. This study that the Federal Office for the Environment commissioned to the Department for Political Science of the University of Zurich takes a bottom up approach and is an attempt to map private climate finance invested in developing countries, as mobilized by Switzerland. It also points to possible future research in view of clarifying the most important definitional questions.

Besides providing a first rough estimate about Swiss' mobilized private climate finance this study – and the iterations and interactions for gathering the relevant data – also identifies a number of factual and methodological difficulties, such as availability of data (or lack thereof), international comparability and definitional issues. It is thus no surprise that the estimated amounts of climate finance provided by Switzerland's private sector covers a very broad range, i.e. from annually USD 0.23 billion up to 2.7 billion. The Federal Office for the Environment hopes that this study contributes to furthering international discussions and to fostering a common understanding on a topic which goes beyond MRV of climate finance itself, but is a key element for building a solid and credible international climate architecture.

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Franz Perrez
Ambassador

Executive Summary

This study explores **private finance mobilized by Switzerland in the context of the goal of industrialized countries to mobilize USD 100 billion per year by 2020 from public and private sources, to address the needs of developing countries** in mitigating and adapting to climate change.

Estimating private finance mobilized by Switzerland that contributes to climate change mitigation and adaptation in developing countries is very difficult because of several reasons. First, **the Swiss private sector is currently not reporting information on climate-related finance**. Second, both internationally and nationally, there is a **lack of clear definitions** of key terms, such as "private finance", "contributing to climate change mitigation or adaptation", and "developing countries". Third, it is **not possible to assign a monetary value to several activities of Swiss companies** with benefits for developing countries, e.g. research & development, transfer of environmental standards and climate-friendly technologies, consulting, education and awareness raising.

This study addressed these measuring challenges in the following way; first, **questionnaires were sent to a range of private actors that are financing climate-related projects.** Second, detailed guidance was given in the questionnaire on how to understand key terms. Third, activities of Swiss companies, to which no monetary value could be assigned, were also covered by the questionnaire and listed in a separate section. Using this approach, **we identified at least CHF 0.2-0.8 billion of private finance that is annually mobilized by Switzerland and contributes to climate change mitigation and adaptation in developing countries.**

However, the estimate of CHF 0.2-0.8 billion rather underestimates real finance figures as it is based on only 35 questionnaires completed by Swiss companies, NGOs and governmental agencies, while the number of relevant private actors is more than double. **The return of questionnaires was incomplete due to transaction costs and the fact that many companies do not internally measure climate-related flows.** The assumption that the real number is under-estimated is supported by **our top-down estimate, which is based on likely Swiss shares of global flows:** using this top-down approach, **private climate finance mobilized by Switzerland, is estimated at CHF 0.5-2.7 billion per year.**

The main reason for low-data quality is that well-established systems for measurement, reporting and verification (MRV) only exist for two types of private climate-related financial flows: compliance carbon market payments and investments mobilized by carbon market payments. Building up reliable MRV systems for other flows may be burdensome, particularly for investments of the Swiss private sector. Therefore, it may be recommendable to wait for international (or national) decisions that provide the necessary guidance on which private flows are to be considered before building up costly MRV systems. For better understanding the Swiss private sector flows, a workshop with industry experts may be useful.

While this study has estimated all different types of climate-friendly flows, **it has internationally never been clarified which types of private flows are to be included in the USD 100 billion. On the basis of relevant international negotiation texts, we derive several potential criteria for inclusion,** such as "mobilized by governments", "covering incremental costs", "no double counting with emission reduction targets", and only accounting "direct North-South flows". **Applying such criteria has major implications on the size of flows,** e.g. the requirement that finance has to cover incremental costs would exclude most investment flows and "no double counting with emission targets" would exclude most carbon market payments. Using just these two criteria together would substantially lower the amount of Swiss private finance as part of the USD 100 billion.

As potential next steps, Switzerland may consider to clarify its own position on "private climate finance" and initiate or support international discussions on the definition of "climate-friendly" and "mobilized" private finance. **As long as no international definitions are available, it seems to be warranted to focus on the flows to be included in the 2014 biennial update report to the**

UNFCCC – private finance mobilized by governmental agencies. For private finance mobilized by bilateral agencies, a Swiss-internal assessment is to be considered; for multilateral agencies and banks, Switzerland may support international initiatives to elaborate acceptable ways of measuring private finance mobilized by multilateral agencies.

In the end, **MRV is just one of two key questions in relation to private finance as part of long-term climate finance. The second, and for the climate regime the most important question is how to mobilize private finance for climate change mitigation and adaptation in developing countries**. In this regard, policy makers will have to analyze and strengthen not only international climate policy but also, or even more enabling environments at the national level, including climate policies in developing countries.

1. Introduction

According to decision 1/CP.16, para 98-100 at UNFCCC COP 16 (UNFCCC 2010), developed country Parties committed, in the context of meaningful mitigation actions and transparency on implementation, to a goal of mobilizing jointly USD 100 billion per year by 2020 to address the needs of developing countries (adaptation and mitigation). These funds may come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources (e.g. new carbon emission levies). Decision 2/CP.17, para 127-131 of COP 17 in Durban specifies a work programme on this long-term climate finance (UNFCCC 2011).

Although a small number of Parties from developing countries continue to argue that funding should come entirely from public/government sources, it is generally accepted – and in line with COP decisions – that private sector finance will contribute towards the goal of USD 100 billion. However, in the climate change negotiations it has never been clarified which activities or financing modes by the private sector would be included and accounted towards that goal. Similarly, attempts to get a COP decision regarding a burden sharing mechanism and a comprehensive mechanism to identify and monitor the private flows of financial support failed, and attempts for harmonized monitoring and reporting of public flows are in early stages. Furthermore, according to decision 2/CP.17, para 121f in Durban (UNFCCC 2011), the Standing Committee will prepare a biennial overview of climate finance flows, summarizing national communications and biennial reports of both developed and developing countries. According to Annex 1 to decision 2/CP.17, para 19, developed countries will have to report biennially on private financial flows leveraged by bilateral climate finance as well as policies and measures that promote the scaling up of private investment in mitigation and adaptation in developing countries. This reporting is separate to reporting on public flows (para 17) (UNFCCC 2011).

1.1 Challenges

The existing efforts to track climate finance lack transparency, comparability and comprehensiveness. This is true for public sector finance (Michaelowa and Michaelowa, 2011), despite common rules and ongoing improvements under the OECD DAC tracking system, and even more so for private sector finance, where the landscape is very complex (Atteridge, 2011; Stadelmann et al., 2011a). Not even the UN High Advisory Group on Climate Financing has attempted to estimate existing private flows and focused on discussing how to leverage private investments (UN, 2010a).

This lack of clarity affects international climate policy negatively by enabling distrust and blame games on the fulfilment of commitments. At the same time, it is clear that against the background of the huge needs for investments in low-carbon technologies and climate-resilient measures, private sector financing sources will be more than just a supplement for public finance but will have to make up the vast majority of investment capital. It is argued that by 2030, around USD 175 billion of finance covering mitigation costs (e.g. public finance or carbon market payments) are needed to mobilize USD 560 billion of mainly private investments per year that will allow to limit man-made climate change to 2°C (McKinsey, 2009)

Total current private sector finance mobilized by industrialized countries (governments and companies) that supports climate change mitigation and adaptation in developing countries has been estimated to be in the range of USD 60 – 160 billion per year (Buchner et al., 2011b; Stadelmann et al., 2011a), the substantial range is mainly due to different definitions, for example climate-specific finance vs. climate-relevant finance, and data gaps. However, not all of it may be counted towards the "goal of jointly mobilizing USD 100 billion". As some argue, there will have to be a traceable causal link between governmental action, in particular public finance and the triggered or leveraged climate finance by the private sector, and it is questionable if financial flows to buy carbon credits used to fulfil targets pledged by Annex-1 countries should be eligible due to potential double accounting. Looking at the reporting guidelines, para 19 of decision 2/CP.17 does not mention flows related to the market mechanisms but only those "leveraged by bilateral climate finance".

1.2 Switzerland's interest

A system for measuring, reporting and verification of private sector climate finance will eventually be negotiated and agreed internationally. This will hopefully include sufficiently clear definitions and choices regarding the assignment of responsibilities. But this will take a long time, and in the meantime developed countries will have to provide information on their flows of finance.

Similarly as in the case of Fast-Start Finance, where Switzerland has been a front-runner in own definitions on several crucial issues such as "new and additional" baselines and the formula for the fair share of each country towards the USD 30 billion, Switzerland may want to develop its definitions, baselines and formula for measuring its fair share of the USD 100 billion figure.

The calls from developing countries and several NGOs that the entire USD 100 billion should come from public sources are not acceptable for industrialized countries. However, these calls increase the pressure for clear and rather restrictive definitions which type of private finance flows should be counted towards the USD 100 billion.

Switzerland is favouring that private sector financing is accounted for, and has, therefore, used a broad definition of the private sector in past discussion. However, a quantification of the private sector flows or share has never been attained.

1.3 Purpose of the study and key definitions "private climate finance"

In view of the forthcoming discussions in the context of the Green Climate Fund and long term finance in general, as well as the biennial reporting as decided by the UNFCCC COP 17 in Durban, Switzerland would like to dispose of better information regarding current flows of climate finance by the Swiss private sector and possible methodologies and metrics[1] through a commissioned study. Findings of the study will be utilized as inputs or submissions into the UNFCCC process as well as into relevant fora such as OECD workshops or the Research Collaborative on tracking private climate finance.

For the purpose of this study we define "private climate finance" as "investments, donations or other financial means of the private sector that support climate change mitigation and adaptation in developing countries". Developing countries are defined as countries that are not part of the OECD[2].

1.4 Structure of this study

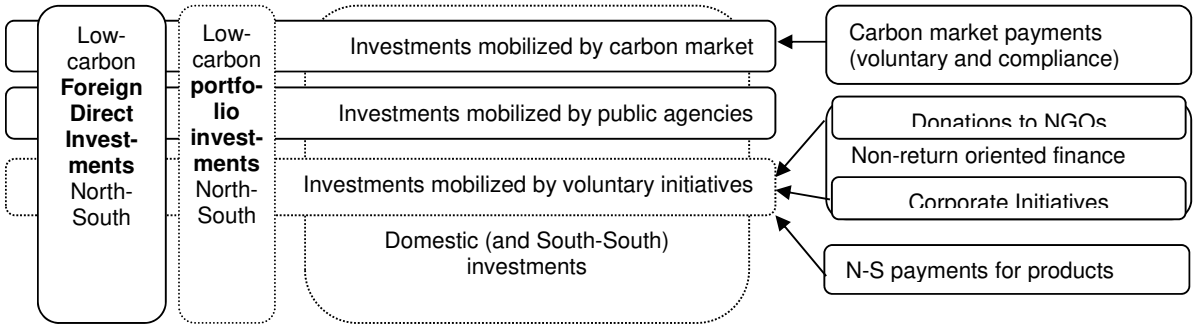
In a first step, this study will estimate current private climate finance (in developing countries) mobilized by Switzerland, as far as current information allows for such an estimate. As a second step, we analyse the existing systems for measuring, reporting and verifying (MRV) these flows, in order to assess uncertainties and room for improvement in these MRV systems. In a third step, we analyze criteria to include or exclude some of the private climate finance flows from the USD 100 billion figure; and criteria to attribute these flows to Switzerland or other industrialized countries. Finally, we explore the implications of these criteria for the volume of Swiss private flows that would be accounted as part of overall Swiss climate finance, and sketch potential next steps for the Swiss government.

[1] i.e. regarding which financial flows by multinational companies should be accounted to whom, weighting of CDM projects, etc.
[2] Note that this definition is not necessarily the official position of Switzerland. In the questionnaire, we also included flows to Chile, Israel, Mexico, South Korea, which are OECD countries but were originally in the climate regime considered as developing countries, but no Swiss private finance was reported to flow to these countries.

2. Preliminary overview of private climate finance mobilized by Switzerland

The private climate finance mobilized by Switzerland (private and public sector) that supports climate change mitigation and adaptation in developing countries was estimated both ***top-down***, based on global figures and Swiss funding shares in related areas, and ***bottom-up***, based on a questionnaire sent to 80 relevant companies, governmental agencies and organizations in Switzerland (questionnaire is provided in the annex). We received feedback from more than 35 companies, agencies and organizations. A wide range of financial flows was considered that partially overlap (see Figure 1). For simplicity, we will assume in the following an exchange rate of 1 USD = 1 CHF for the years 2009-2011.

Figure 1: Overview of private climate finance mobilized by Switzerland



N-S = North-South; source: adapted from Stadelmann et al. (2011a); Flows with a solid line are reported below.

2.1 Carbon market payments

Carbon market payments are purchases of securities related to the reductions of greenhouse gas emissions, also called carbon credits or emissions allowances. Carbon market units are either purchased to comply with international or national obligations (compliance market) or because of voluntary reasons, e.g. to offset air travel emissions (voluntary market). Most of these payments are made by private companies. Only carbon credits related to emission reductions in developing countries are considered here.

In the compliance market, Switzerland is estimated to pay annually around CHF 50 million for Clean Development Mechanism (CDM) credits to comply with its targets under the Kyoto Protocol in the period 2008-2012. This is about 2.5% of the global estimated payments for CDM credits in the years 2008-2011 (USD 1.4-3.4 billion in 2008-2011, see Stadelmann et al. 2011a)[3]. The credit payments include the expenditures of the Climate Cent (around CHF 50 million per year) for purchasing CDM credits with the revenue from a levy on gasoline and diesel (Climate Cent, 2011) and CDM credits purchased by companies in the Swiss Emission Trading System, estimated at CHF 0.1 million per year, based on the 28,000 CERs surrendered in the years 2008-2010 (BAFU, 2012). The top-down estimate is very close to the bottom-up results from the questionnaires (around CHF 46 million).

In the voluntary market, Swiss companies and organizations[4] are estimated to have paid USD 5-6 million for carbon credits from developing countries in 2010/2011. The lower figure was estimated by multiplying the transaction volume for credits from developing countries with the approximate share of Swiss customers of non-US voluntary credits in 2010 (Peters-Stanley et al., 2011), while the upper

[3] The global payments were estimated by multiplying issued credits per year times average carbon price. The average price was estimated by weighing the primary credit price with the percentage of bilateral projects (projects with Northern project participant) and the secondary credit price with the percentage of unilateral CDM projects (without Northern project participant).

[4] We define "Swiss company / organization" here as a company / organization that has its headquarter located in Switzerland.

figure is the volume voluntary offsets purchased by Swiss buyers in the year 2011 (Peters-Stanley and Hamilton, 2012), assuming all of the offsets are taking place in developing countries as is the case for the largest Swiss offset providers. The Swiss share of the global voluntary offset market for credits in developing countries is around 1-1.5%. Full bottom-up results are not yet available, but from the existing questionnaires we estimate payments of at least CHF 9-11 million per year.

2.2 Non-return oriented finance (with climate benefits)

Non-return oriented finance (with climate benefits) is defined as donations or investments with no return or carbon credits expectations but climate change (mitigation and/or mitigation) benefits in developing countries[5]. The most relevant flows in this regard are programmes of development and humanitarian organizations as well as corporate initiatives and donations.

Our top-down estimate is that Swiss development and humanitarian organizations are contributing around CHF 5-40 million per year for programmes with climate benefits in developing countries. The lower figure is derived from US philanthropy donations for climate change (USD 0.15-0.2 billion, see Buchner et al., 2011b), and the Swiss (1%) and US (31%) share in philanthropy donations for developing countries (Hudson Institute, 2011). The upper figure is estimated from the Swiss private donations for development NGOs in 2008 and 2009 (~CHF 400 million, see DEZA and SECO, 2011) and the upper bound of estimated share of ODA projects contributing to climate change mitigation and adaptation (5-10%[6]). It has to be noted that Swiss private development organizations see their programmes as primarily development-oriented, while climate change mitigation and adaptation is seen as co-benefit. Therefore, they question if any of their money can be seen as additional climate funding (meeting with representative, April 2012). The corporate climate initiatives of Swiss companies – climate change initiatives where companies do not expect any monetary return – are not estimated due to definitional challenges.

Our bottom-up estimates, based on the 35 returned questionnaires, is that Swiss companies and organizations provide at least CHF 16-32 million of non-return oriented climate finance per year. The lower figure is based on own means of the NGOs and companies, while the higher figure includes financing on behalf of other institutions, where double counting cannot be excluded.

2.3 Payments for low-carbon products

Industrialized countries may reduce emissions in developing countries when purchasing products that have a lower carbon footprint compared to similar products. For Switzerland, payments for low-carbon products are particularly important as almost half of emissions of Swiss consumers are from imported goods (Jungbluth et al., 2007).

Swiss consumers already pay for low-carbon import products as Switzerland's largest retailers Coop and Migros are already investing in carbon emission reductions. They are also ranked as two of the most sustainable retailers worldwide (Oekom Research, 2011). Some of the steps undertaken by these Swiss retailers are supply chain carbon reduction, carbon offsetting and the promotion of labels with potential climate benefits (e.g. Forest Stewardship Council[7], Roundtable on Sustainable Palmoil). Given the difficulty to define "low-carbon product" (e.g. the problem to quantify the share of imported

[5] In case of investments with return expectations below market rates, the difference between market rates and expected returns is seen as the non-return oriented part

[6] This share is a conservative estimate, derived from the share of Official Development Assistance (ODA) commitments in 2010 marked as principally (9%) and principally or significantly (14%) contributing to climate change (OECD, 2011a).

[7] Certification under the Forest Stewardship Council (FSC) does at the moment not require any carbon benefits but the FSC General Assembly 2011 requested the FSC " to recognize carbon as an environmental value and address responsible stewardship of carbon storage and sequestration" and "to explore the feasibility and wider implications of including natural ecosystems with [...] significant amounts of carbon stored in vegetation and soil as a High Conservation Value."(FSC, 2011)

low-carbon products that substitute higher carbon alternatives), the payments for low-carbon products are not estimated here.

2.4 Foreign Direct Investment (FDI) and other investment flows

FDI is relevant because it is the largest North-South financial flow since 1992 (Gentry and Esty, 1997) and it flows to a significant extent into mitigation-relevant sectors (Corfee-Morlot et al., 2009). FDI is where the investor receives "control or a significant degree of influence on the management of an enterprise that is resident in another economy" (IMF, 2009). Usually, >10% share is seen as significant degree of influence[8]. The main challenge for tracking climate-relevant FDI is the definition of which type of FDI is contributing to climate change adaptation and mitigation (Buchner et al., 2011a).

Our top-down estimate is that Swiss companies made USD 0.2-1.1 billion in FDI contributing to climate change mitigation in developing countries in 2009. The lower figure is derived from Swiss export statistics[9]. The upper figure is derived from the roughly USD 29 billion of low-carbon FDI flows from industrialized to developing countries in 2009 (UNCTAD, 2010)[10]. Apart from low-carbon FDI, low-carbon portfolio investments – international investments in low-carbon companies where the investor does not obtain a lasting interest or control in a foreign enterprise – may be considered (Stadelmann et al., 2011a) but we refrain from estimating a number given the missing data and methodological challenges.

Bottom-up (company-based) numbers are difficult to calculate as only few companies sent the questionnaire back. There were three main reasons for the low rate of filled-in questionnaires according to the e-mail responses: lack of company-internal data, missing clarity on the definition of "private climate finance" and no climate-related FDI according to the view of these companies. Two companies reported to have invested around CHF 54 million in climate-friendly projects or companies in developing countries in 2011.

2.5 Private investments mobilized by Switzerland

The potentially largest private sector flow to be considered is the one of private investments mobilized by Switzerland. We use the term "mobilized" here as it has been used in decision 1/CP.16, para 98 and it is more neutral than the often used term "leveraged" (which is used in Annex I to decision 2/CP.17, para 19); the latter originally comes from debt leveraged by equity (Brown et al., 2011)[11]. Mobilized investments do not necessarily flow North-South, they may also be domestic or South-South investments. All investment flows accounted for, as mobilised by Switzerland, include both public and private investments.

[8] The OECD (2008) sees influence as given if a foreign investor acquires at least 10% of the foreign company, while the IMF definition is more flexible. Special arrangements have been made to account for the emerging complex investment structures of multinational companies (e.g. holdings).

[9] We multiplied the average 2008-2010 Swiss FDI outflows to developing countries in the "electronics, energy and watches" sector with 38% of the share of the energy and hydro sub-sector to the overall GDP contribution of the "electronics, energy and watches" sector, while further multiplying this with 15-75% contributing to climate change mitigation or adaptation (this share is derived from the share of Swiss energy- and water-related exports, insured by the Swiss Export Risk Insurance in 2009 and 2010, that were either promoting climate change-mitigation and/or adaptation

[10] We multiplied the UNCTAD figure (USD 29 billion) with the Swiss share of Annex-2 FDI outflows to developing countries in the years 2006-2010 (4%). Buchner et al. (2011b) use the figure of USD 37 billion flowing to developing countries but we deduct 23%, the average share of low-carbon FDI flowing to developing countries that originate from other developing countries (UNCTAD, 2010).

[11] We refrain from distinguishing between equity and debt investment here as related data is not available and simply assuming common debt-to-equity ratios (see Buchner et al., 2011b) is in our view not very informative.

Private investments mobilized by Swiss carbon market payments

For the compliance market, our top-down estimate is that Switzerland mobilized CHF 375-750 million annually in 2008-2011. This was calculated using the estimated share of Swiss compliance payments (2.5%) and the estimate by Stadelmann et al (2011a) that approximately USD 15-30 billion of investments are undertaken in CDM projects every year, which can be derived from CDM project document data (URC, 2012). This estimate assumes that all investments in CDM projects would not have happened without carbon market payments, which is not always the case according to several studies (Michaelowa and Purohit, 2007; Schneider, 2009). We were not able to estimate a bottom-up number as the questionnaires filled out by Swiss companies stated that no private investments was mobilized with carbon market payments. These statements may not be realistic, as it would mean that none of the promoted projects were additional to the business-as-usual scenario[12]. As a proxy for mobilized investments, the numbers in the UNEP RISOE Centre CDM pipeline (URC, 2012) could be linked to the carbon credit purchases under the Swiss government's Climate Cent programme.

Investments mobilized via the voluntary carbon market are not estimated top down, as no global figures for private investment mobilized by the voluntary carbon market are available.

From the bottom-up, CHF 40 million of investments mobilized by the private sector were reported, but the additionality of some of these investment flows seems questionable (see CDM additionality discussion above).

2.6 Investments mobilized by Swiss public agencies (bilateral and multilateral channels)

Investments are mobilized by Swiss public agencies through two channels: first, through bilateral climate-related development assistance and second by holding shares in multilateral development banks. Investments mobilized by climate-related development assistance in the years 2009-2011 are estimated top-down at CHF 26-339 million, which was derived by multiplying Swiss Official Development Assistance (ODA) commitments, marked as having climate change mitigation and/or adaptation as significant or principal objective (USD 50-130 million) in the years 2009-2010, with 0.4-2.6 for the ratio of mobilized private investment to mobilizing public finance[13]. We are not yet able to estimate a reliable bottom-up number (based on the numbers of the Swiss government agencies), as private finance is not yet included in standard MRV systems of Swiss agencies. Also in the ODA impact evaluation reports (e.g. SECO, 2010), data on mobilized private investments is not included. Only for the SECO-financed Swiss Investment Fund for Emerging Markets (SIFEM) we can estimate at least CHF 12 million of mobilized investments in low-carbon technologies[14]. Furthermore, we can estimate that the Swiss contribution to the GEF climate change focal area and LDCF/SCCF in the fast-start period (CHF 5 million per year, see Switzerland, 2011) may have mobilized around CHF 8-14 million of investments[15] and that the 2011 SECO payments to the Scaling-Up Renewable Energy in Low Income Countries (SREP) fund mobilizes around CHF 8-9 million of private finance[16]. So we estimate a minimum of CHF 28-32 million of mobilized investments per year. However, this number excludes potential private investments in bilateral infrastructure projects and via various multi-bi

[12] If CDM projects are additional to the "business-as-usual" scenario, so they would not have happened without CDM credit payments, then all private investments in CDM projects are mobilized by carbon market payments.

[13] The literature shows ratios of up to 10-15 (Stadelmann et al., 2011b) but real carbon market and public finance project-level data show that a realistic ratio of mobilized private finance to mobilizing finance is rather in the range of 0.4-2.6 (Stadelmann et al., 2012)

[14] According to SIFEM's annual report (SIFEM, 2012b), each USD of their investments was matched with USD 3.5 from other investors (excluding other public development finance institutions and multilateral development banks); while this number is 2.95 for clean energy funds (personal communication with SIFEM). We identified CHF 9 million of annual SIFEM investment in sustainable energy or forestry funds in the years 2008-2011, while for around CHF 4 million per year the private co-investment was tracked (around CHF 12 million each year).

[15] For a sample of randomly selected 101 GEF climate change project documents (GEF, 2011) we found that the ratio of investments to GEF grants is 2.9 on average. Only looking at private investments, the ratio is 1.6. We use the latter ratio as lower figure as it is not clear if public investments can be seen as "mobilized".

[16] This figure was calculated multiplying the CHF 11 million payments in 2011 with 0.78, the projected ratio of private investment to SREP funding calculated using data from five existing investment plans (CIF, 2011) .

climate funds (e.g. Forest Carbon Partnership Facility), and private investments mobilized via Swiss climate-related ODA may, therefore, in reality be higher.

Investments mobilized through shares in multilateral development banks are estimated to be USD 17-830 million per year, which is derived by multiplying the Swiss share in multilateral development banks (0.8-1.7%)[17] with USD 2-50 billion per year, an estimate for climate-related investments mobilized by multilateral development banks (Stadelmann et al., 2012).

Investments mobilized by Swiss export risk insurance
Finally, Switzerland also mobilizes financial flows through the Swiss Export Risk Insurance (SERV). The SERV does not insure investments of Swiss companies but it insures exports of capital goods[18]. SERV only insures exports where insurance policies are not available on the private market. Therefore, these exports are not likely to happen without SERV support, and "low-carbon investments mobilized by SERV" can be seen as equal to the delivery value of the insured exports of capital goods[19].

The top down estimate for climate-friendly investments mobilized by Swiss export risk insurance (USD 6-33 million) is estimated by multiplying USD 700 million, the estimate of Buchner et al. (2011b) for green export credits in 2009 with a ratio for mobilized to mobilizing finance (0.4-2.6) and 1.9%, the Swiss share of OECD cash flow results of officially supported export credits from 1999-2010 (OECD, 2012a).

The bottom up estimate (CHF 50-590 million per year) is derived from an analysis of the exports with a new SERV insurance policy in 2009 and 2010. The low values (CHF 50-420 million) only include technologies for low carbon projects (railway, solar power), while the higher numbers (CHF 410-590 million) also include exports of energy efficient (often best available) technologies to projects with high carbon emissions (e.g. steel plants).

2.7 Total sum of private climate finance (in developing countries) mobilized by Switzerland

Table 1 gives an overview of our estimates of private climate finance mobilized by Switzerland. From the top down, we estimate a total sum of CHF 0.5-2.7 billion of private climate finance in developing countries mobilized by Switzerland, while from the bottom-up (questionnaires), we estimate at least CHF 0.2-0.8 billion per year. These figures are, however, just a very rough estimate given that we were not able to obtain reliable figures for the largest flows (FDI and private finance mobilized by public agencies).

The total of private climate finance is not the same as the sum of individual types of private climate finance, as some flows would be double counted: In the total figure, carbon market payments are excluded, as they are already covered under investments mobilized by carbon markets, and 20% of mobilized private finance is deducted in case of top-down figures, as it overlaps with FDI, see Stadelmann et al. (2011a).

[17] The lower figure is the average Swiss share in the most important Regional Development Banks (DEZA, 2012), while the higher figure refers to the Swiss share in subscribed capital of the World Bank (International Development Association and International Bank for Reconstruction and Development) per June 2011 (World Bank, 2011a, 2012).
[18] In all relevant cases, insured exports were capital and not consumer goods.
[19] All of the studied exports are capital goods (e.g. solar power plant production equipment, engines, compressors, turbines) and not consumer goods (e.g. food, cars).

Table 1: Overview of private climate finance mobilized by Switzerland (rough estimates)

	Top-down estimate		**Bottom-up estimate**	
Source	*Global figures, country shares*		*Questionnaires*	
Unit	*Million CHF (per year)*	*Share of all industrialized countries*	*Million CHF (per year)*	*Share of all industry. countries*
Year(s)	2008-2011	%	2011	%
Carbon market payments	**55-57**	**~2-2.5%**		
*- compliance**	*50*	*~2.5%*	*46*	n/a
- voluntary	*5-6*	*1-1.5%*	*9-11*	n/a
Non-return oriented finance	5-40	1-6%	>16-32	n/a
Payments for products*	n/a	n/a	n/a	n/a
Foreign Direct Investments	150-1100	1-4%	>54	n/a
Portfolio investments	n/a	n/a	n/a	n/a
***Investments mobilized by**	**450-2000**			
- carbon markets (compliance)	*~375-750*	*~2.5%*	n/a	n/a
- carbon markets (voluntary)	n/a	n/a	>40	n/a
- bilateral develop. assistance	*26-339*	*~0.5-1%*	>28-32	n/a
- multilateral develop, banks	*17-830*	*1-1.5%*	n/a	n/a
- export insurances	*6-33*	*2%*	*50-590*	*unknown*
Total flows, without double counting**	**~450-2700**	**~1.5-2%**	**>230-790**	n/a

*May include public flows. Data sources and assumptions: see main text
** For avoiding double counting, we deducted 20% of mobilized investments, which is thought to be part of FDI (the 20% is a conservative estimate, given that the FDI inflows to developing countries' have only been at 13% of gross domestic capital formation in the years 2005-2009 (using data from World Bank, 2011b).

3. Activities of the Swiss private sector beyond finance

Apart from investing in developing countries and making charitable donations for climate change mitigation and adaptation in developing countries, Swiss companies also conduct further activities that lead to low-carbon investments in developing countries. Some examples are;

- Research & development of low-carbon and climate resilient technologies (e.g. ABB)
- Transfer of environmental standards from developed to developing countries by multinational companies
- Exports of clean technologies to developing countries (beyond exports promoted by the Swiss Export Insurance): Swiss exports are mostly expensive high tech products that enable efficient use of resources, such as energy or water (e.g. ABB, Stadler Rail) or the use of renewable energy (e.g Meyer Burger, Oerlikon Solar). One possibility to give an impression of the Swiss private sector contribution through clean-tech exports would be to measure the export value of low-carbon and climate-resilient technologies, using existing trade statistics (e.g. UN, 2011) and agreeing on a list of relevant technologies.
- Training of local staff and / or population in the use of low-carbon and climate-resilient technologies (e.g. ADES, Syngenta Foundation)
- Consulting on climate change mitigation and adaptation (e.g. Caritas, Ernst Basler & Partner, Infras, South Pole).

Some of these activities may have a multiplicative effect, e.g. the training of staff and export of clean technologies may lead to further climate change mitigation beyond the primary impact of related technologies, via learning and diffusion.

Even when such activities cannot be quantified in terms of finance or reductions in greenhouse gas emissions, it may be recommended that the Swiss government report on them as case study examples, in the first biennial report (January 2014)[20].

Apart from these non-quantifiable activities of the Swiss private sector that *positively* contribute to climate change mitigation and adaptation in developing countries, we may also have to mention non-quantifiable activities that may *negatively* affect climate change mitigation or adaptation, e.g. activities related to mines, refineries or fossil-fuel-based power plants.

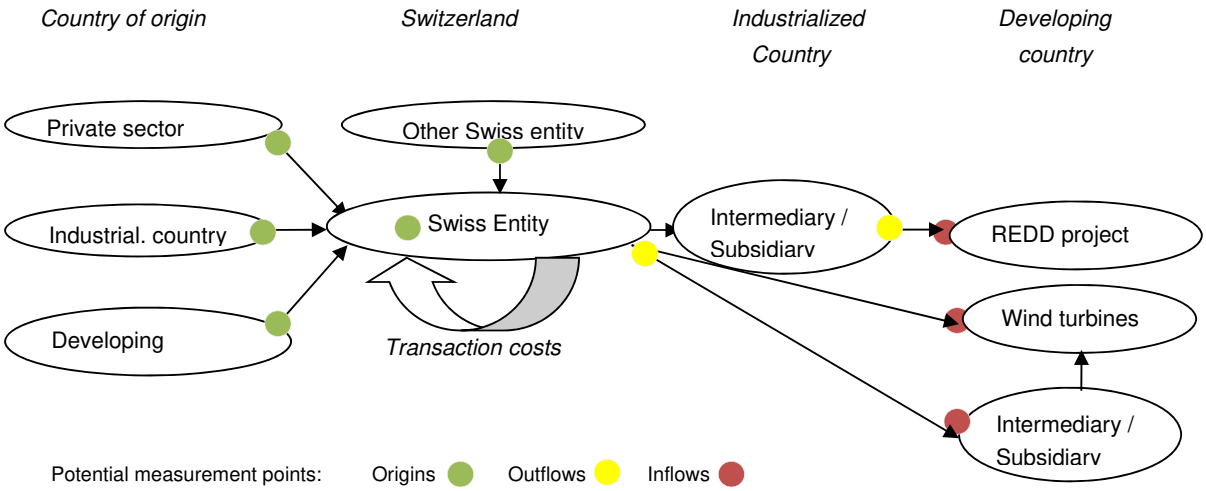
4. Existing and future systems for measuring, reporting and verification

In this section, we analyze the existing procedures to measure, report and verify (MRV) the different types of private climate finance describe above. We also identify gaps in the data, room for improvement and institutions that can potentially track data in the future.

While reviewing the systems, we analyze inter alia the following questions;

- **Measurement point:** Does the system measure the sources of private finance, the outflows from developed countries or the inflows to developing countries (see Figure 2)? In case of "mobilized investments", where is it measured?
- **Commitments vs. disbursements/flows**: does the system measure commitments for finance or actual disbursements/flows?
- **Direct vs. indirect measurement**: does the system directly measure the financial flows (e.g. carbon market payments) or does it measure different variables that serve to calculate the financial flows (e.g. amount of carbon credits purchased and average carbon credit price)?
- **Verification:** is the data only measured and reported or also verified? If verified, by whom?
- **Room for improvement:** what are pitfalls of the current systems? What is needed to achieve completeness and accuracy?

Figure 2: Potential measurement points



4.1 MRV of carbon market payments

[20] Decision 2/CP.17, Annex I, para 19: "Annex II Parties should report, to the extent possible, on private financial flows leveraged by bilateral climate finance towards mitigation and adaptation activities in non-Annex I Parties, and should report on policies and measures that promote the scaling up of private investment in mitigation and adaptation activities in developing country Parties" (UNFCCC, 2011b)

In the case of Switzerland, measuring the carbon market payments (compliance) is currently simple as one institution is sourcing more than 99% of CDM credits for the Swiss Kyoto target and this institution publishes an annual report with verified information on payments (Climate Cent, 2011). Furthermore, CERs surrendered by companies in the Swiss ETS are annually reported by the Swiss national emission registry (BAFU, 2012) and related payments can be estimated taken average market prices. The uncertainty related to market prices does not result in significant uncertainty in the overall figure, given the small share of credit payments (<1%) where the price is unknown.

In the future, a broader system will be needed as carbon market payments for Swiss compliance may be conducted by different players and international agreements may ask for information verified by governments. A good source for this information is the Swiss national emission registry for three reasons. First, all CERs used for compliance in Switzerland are registered there[21]. Second, the national emission registry has to comply with UNFCCC rules that are the same for all countries with Kyoto targets. Therefore, international comparability is given. Third, data in the registry is externally verified by the UNFCCC. Given this excellent data on carbon credits used for compliance, the remaining MRV task for deriving carbon market payments is to measure the CER credit price, which is challenging as credit prices are seldom reported. One possibility to "measure" the CER credit price is to use market prices for already issued credits (secondary market), which are publicly available (e.g. PointCarbon, 2011). However, a substantial part of CDM credits are bought before issuance (primary market), and prices on this primary market are rarely reported[22]. So for an accurate estimate, the Swiss government would have to oblige companies using CDM credits to report the carbon credit price. Confidentiality concerns could be alleviated by only displaying aggregated data to the publci. One challenge is that most CERs are bought via international traders or brokers, so the actual amount of revenues accruing to developing countries may be lower than what is reported.

In the voluntary market, no reliable MRV system is available. Ecoystem Marketplace (Peters-Stanley et al., 2011) annually reports on yearly transactions based on surveys filled out by companies but data is neither comprehensive nor verified. Some voluntary market players (e.g. myclimate) report verified data on their carbon market expenditure but data is not separated between payments to industrialized and developing countries. The survey result showed that voluntary carbon market payments are actually known to the largest Swiss companies so the governmental task would be to set up a (voluntary or mandatory) reporting and verification system. Special attention is needed to avoid double counting of carbon market payments made by Swiss companies on behalf of foreign customers and payments made by Swiss companies via foreign offset providers.

4.2 MRV of non-return oriented finance (with climate benefits)

Verified data on non-return oriented investments (donations) to developing countries are reported by major development NGOs, while the Swiss government compiles data on Swiss private donations to development NGOs (DEZA and SECO, 2011). However, these MRV systems do not collect data on the part contributing to climate change mitigation and/or adaptation. The survey showed that it is, actually very challenging for development NGOs to measure their share of climate-related donations, particularly in the area of climate change adaptation. Therefore, if Switzerland considers to ask its private sector to report on climate related donations, it may be recommendable to provide guidance based on the current reporting of Rio markers on climate change adaptation and mitigation (OECD, 2011a). Interesting data may also be compiled without further reporting obligations for Swiss NGOs by estimating the co-financing provided by Swiss development NGOs to Swiss ODA programmes marked with Rio markers[23]. Systems to measure independent donations or corporate initiatives of Swiss

[21] One limitation of the registry is that the number on credits used for compliance is not known immediately after each year, as credits are surrendered to the UNFCCC for a multi-year period and only three years after the end of a crediting period (2015 in case of the 2008-2012 period). This is one example for the challenge of allocating funding to specific years: it can be the year of commitment, disbursement (Clapp et al., 2012) and in the carbon market case even the year of surrendering credits.

[22] Some estimates are available but hardly reliable (GIZ, 2011; Linacre et al., 2011).

[23] If the Swiss Agency for Development and Cooperation (SDC) provides ODA funding via Swiss development NGOs, these development NGOs are obliged to provide at least 50% co-funding.

companies are not known. Using annual reports may be a starting point but the climate change and developing country shares are rarely reported separately from other donations.

4.3 MRV of payments for low-carbon products

Systems to report payments for low-carbon products are not available at the moment. While some annual reports (e.g. Coop, Switzerland's second largest retailer) include descriptions of initiatives to reduce the carbon footprint of purchased goods, information on revenues from these products are not available. Many companies measure their carbon footprint but do not specify the emissions taking place in developing countries. Achieving a commonly recognised definition for "low-carbon product" is required as starting point. However, even with a definition, the measurement will be very challenging given the complexity of carbon life-cycle assessment and separating out the emissions taking place in developing countries. Some international "consumer labels" may qualify as indicators for a low-carbon product in the future but at the moment, none of the labels reviewed (Forest Stewardship Council, labers for organic farming, Roundtable on Sustainable Palmoil and Roundtable on Responsible Soy) is currently a convincing indicator of a reduced carbon footprint, while the only known Swiss initiative for carbon labelling (Climatop) is not internationally used[24]. Other labels such as WindMade™ are currently no widely used in Switzerland. Even if decisions on labels for "climate-friendliness" were taken, Switzerland currently has no national data for payments for products using these labels[25], so new MRV systems would have to be established. Moreover, the share of imports substituted by low-carbon imports would have to be calculated, which seems a very onerous and expensive task.

4.4 MRV of Foreign Direct Investments (FDI) and other investment flows

The Swiss National Bank (SNB) is the official source of data regarding FDI outflows from Swiss companies (SNB, 2012). It provides public data on the recipient countries of Swiss FDI flows and distinguishes broad sectors (e.g. "electronics, energy, optical and watch making") that do not allow for estimates of climate relevance. The SNB also has FDI figures per company but this data is confidential and can only be shared within the administration. BAFU could estimate climate-relevant FDI by coding companies as climate-relevant or not. However, a similar effort to estimate "green FDI" by coding environmental-friendly companies has been judged as very challenging by Swedish statisticians (OECD, 2011b), inter alia because FDI is normally only reported by larger companies (in case of Switzerland companies with more than CHF 10 million FDI outflows per year), whereas companies with environmentally friendly investments are often small. Hence, additional surveys for companies would be needed, thereby generating reporting burdens for them. Climate-related FDI would best be estimated by data per investment project but the only databases with project-level information (Bloomberg New Energy finance, FDI intelligence), are private (fee for data access), not externally verified, and likely incomplete as they are only based on publicly available data. A general challenge in estimating "climate change FDI", no matter whether the analysis is done on a sectoral, company or project level, is the lack of an agreed definition of "climate FDI" on an international level (Buchner et al., 2011a; Stadelmann et al., 2011a). Reactions from Swiss companies showed that they have difficulties to judge whether investments are "climate-friendly" or not, so they will need detailed guidance (e.g. lists of investment projects that could qualify as "climate-friendly").

MRV systems do not exist for low-carbon portfolio investments. The only way to obtain this data would be to conduct a broad survey with companies, mainly investment banks. However, none of the

[24] The example of Climatop also shows the challenges of labeling „low-carbon products" produced in developing countries: assessment costs are high and only for few product categories, low-carbon products can be clearly separated from high-carbon alternatives (information from a person that has assessed products on behalf of Climatop).

[25] Data is available on the market value of imported wood from developing countries and the share of certified areas in developing countries (BAFU, 2011). However, it is questionable if we can derive a number for payments for low-carbon forest products as certified products do not necessarily lead to less deforestation (expert opinion)

contacted banks conducting portfolio investments in developing countries through sustainable investment funds was able to give a reliable estimate because sustainable investment funds frequently change their portfolio[26] and do not assess the low-carbon share in the portfolio. Furthermore, most portfolio investments are undertaken on a company and not project level, which raises the challenging task of coding companies as "climate-friendly". The type of "low-carbon portfolio investments" that would be easiest to be tracked would be investments in "low-carbon funds", where fund investors only buy small shares in the companies covered by the fund. However, Swiss banks currently only offer "low-carbon funds" with very small and frequently changing developing country shares (e.g. UBS Equity SICAV - Climate Change) or emerging market funds with no specific climate focus (e.g. Credit Suisse SICAV One Equity Global Emerging Markets). Therefore, estimating Swiss portfolio investments would be a very onerous task.

4.5 MRV of investments mobilized by Switzerland

In case of mobilized private investments, we do not find reliable MRV systems apart from the CDM (and partly the voluntary market).

4.5.1 Private investments mobilized by Swiss carbon market payments

In most cases, CDM project documents display planned investments (URC, 2012). The investment data is externally verified as it is relevant for assessing "additionality" of CDM projects[27]. The requirement that CDM projects are additional to the business-as-usual situation should also imply that the related investment is indeed mobilized by carbon market payments. As this is not always the case (Michaelowa and Purohit, 2007; Schneider, 2009), an international agreement may be needed on the percentage of investments in CDM projects that is considered to be "mobilized". Related to the investment data, there are two further MRV challenges: the first is that not all planned investments really take place and investments are not verified ex-post. For simplicity, one may assume that all CDM projects with issued credits have undertaken the planned investments. The second MRV challenge is the attribution of mobilized investment to credits. Dividing investment by the number of issued credits is not feasible as the number of issued credits changes over time. Therefore, investment may be better attributed to credits by dividing the investment by the number of credits projected in the project document.

In case of private investments mobilized by voluntary carbon market payments, MRV quality differs. Data is reliable for some voluntary carbon market standards (e.g. Gold Standard, Voluntary Carbon Standard, VER+) that have similar MRV systems as the CDM, publish project documents and display "cancelled" credits. The "cancellation" is a proof that a credit has been deleted by a specific company and cannot be used again. Fortunately, most voluntary credits bought by Swiss entities are externally verified (e.g. CDM, Gold Standard, Voluntary Carbon Standard, VER+). A challenge may be that voluntary carbon market documents do not always display investment figures. Furthermore, all the other challenges mentioned above, also apply.

4.5.2 Investments mobilized by Swiss public agencies (bilateral and multilateral channels)

In case of private investments mobilized by bilateral agencies, the relevant Swiss agencies (DEZA and SECO) have no established MRV procedure. Some private investments are notified in project documents and the SECO-sponsored Swiss Investment Fund for Emerging Markets (SIFEM) uses "Mobilization of local capital and savings" as one of eight development indicator (SIFEM, 2012a), so for climate-relevant ODA flows through SIFEM, reliable data may be collected by SECO. Furthermore,

[26] One of the contacted investment bank responded that portfolio investment should better be assessed for a specific reporting date rather than for a year. The net flow into low-carbon portfolio investment could, therefore, be assessed as the difference between the stock at the end of the year and the stock at the beginning of the year.

[27] Some CDM projects do not display investment data but this is getting less frequent as projects applying only a barrier analysis for assessment of additionality face high rejection rates.

SECO and BAFU invest in several "multi-bi" initiatives (bilateral funding channelled via trust funds managed by multilateral institutions), for which some preliminary MRV systems for private investments are available (see below). In all other cases, new procedures would have to be established to measure the mobilized investments. The most lenient way of introducing MRV of private investments would be to complement existing reporting documents (ex-ante project documents, monitoring and evaluation reports) with data on private sector co-financing. Such a figure may not only be useful for international reporting but also for internal evaluation of private sector involvement. One hurdle is that only a small part of projects is currently evaluated. An interesting opportunity is SECO's evaluation of its climate change portfolio in 2014, which may include some data on private investments. Long-term, sustainable reporting systems would have to be integrated into existing reporting of development flows to the OECD. Given the ongoing burden of ODA reporting and the methodological challenges, Swiss development agencies are not willing to estimate mobilized investments in the absence of international obligations (source: interviews with representatives of Swiss development agencies).

For private investments mobilized through multilateral channels, some basic MRV systems exist but procedures will have to be streamlined to make data comparable. The Global Environment Facility, through which around 10% of Swiss fast-start finance flows (period 2010-2012), requests its projects to report public and private co-financing, and documents are reviewed by the GEF secretariat. Similarly, projects of most development banks[28] (Regional Development Banks and World Bank) and trust funds administered by development banks, usually report on public and private co-financing, but it is not always clear which co-financing is public or private (e.g. "borrowing countries financial intermediaries.")[29] Such data is also the basis for estimating "leverage ratios" (private investment to public funding) of development banks and agencies as recently reported (UN, 2010b, 2010c). Unfortunately, information is not publicly available on how the GEF or development banks estimate mobilized private finance and whether this data is verified.

If common guidelines will be developed for both bilateral and multilateral agencies, on how to measure, report and verify private finance such guidelines will have to address namely the following issues;

- Which investments are to be considered as "climate-friendly"? A practical solution would be to count investments in projects marked with a "climate change" mitigation or adaptation Rio marker (climate change as principal or significant goal) as "climate-friendly". However, the marking of ODA and OOF flows with Rio markers has shortcomings and may have to be improved (Michaelowa and Michaelowa, 2011).
- When are private investments to be seen as "mobilized" by multilateral and bilateral agencies? Some private co-finance may be business-as-usual investments that would happen without intervention of development agencies. While the CDM has established procedures for assessing "additionality" of investments, the CDM tools may be too onerous. Therefore, simpler decision criteria for "mobilization" may be used (e.g. timing of investment decision, financing the same project parts as public finance). Furthermore, more specific guidelines are needed for public finance tools that try to mobilize private investments at several levels, e.g. through public-private equity funds (Brown and Jacobs, 2011): can also indirectly mobilized private finance be seen as "mobilized"?
- At which project stage are private investments to be considered? Private investments planned as integral part of the project, investments mobilized during the implementation period or even follow-up investments after the project? Using data at the project start may include planned but not undertaken investments, so investments mobilized during the whole project period may be the more accurate measure. Such investments mobilized during the project period can also more easily be monitored and verified with established procedures, compared to follow-up investments after the project period.

[28] Multilateral agencies beyond GEF and World Bank may also measure this information but public reports are not known to the authors.

[29] In case of the World Bank and Regional Development Banks, their loans may also be seen as (at least partially) "private finance", as they are sourced on the capital market.

- How are investments allocated to contributor countries made through multilateral institutions? In the section before, we simply used the share of paid-in capital (development banks) and share of contribution (to trust funds, multilateral agencies) to assess the Swiss share of private investments. While this may a feasible solution in most cases, detailed procedures may need to consider the relevance of "shares subject to call" (development banks) and the difference between contributions through loans and grants in case of trust funds (e.g. Clean Technology Fund).

4.5.3 Investments mobilized by Swiss export risk insurance

The Swiss Export Risk Insurance (SERV) measures the delivery value of the insured export goods. As argued above, the delivery value may be considered equivalent to "mobilized investments" into Swiss capital goods, as the SERV only insures exports where insurance policies for such exports are not available on the private market. There are, however, two pitfalls with this data: first, the delivery value is displayed in the year of the insurance policy, but not year of export, so it cannot be guaranteed that all insured exports really take place. Therefore, some ex-post adjustments may be needed. Second, the "climate-friendliness" of export goods is not assessed by the SERV[30]. Our ad-hoc assessment (see above) may be challenged internationally. A more reasonable definition of "climate friendly" exports could be to only consider exported goods that receive favourable insurance or credit terms because of their environmental / climate change value. In this regard, Switzerland is invited to actively participate in the emerging OECD definition of "climate change mitigation" projects promoted by export credit agencies[31].

4.6 Overview of MRV systems

Table 3 summarizes the best available MRV systems for private finance mobilized by Switzerland. Only a few flows, e.g. the majority of carbon market payments, provide a sufficient level of accuracy as they are both measured directly and are also verified. For all other flows, MRV systems have to be improved in order to receive reliable estimates. In many cases (e.g. "mobilized" private investments, FDI, insured exports), clear definitions of climate-friendliness are needed; using OECD guidelines on "climate change" markers is one possible solution, but that would require more methodological clarity on the markers (e.g. list of technologies or project types to be considered) as well as a process which allows non-OECD member countries to be involved.

Table 3 also shows that requirements for improving MRV systems are high. Therefore, policy makers may have to consider how much financial resources are required for improvement, and whether this is politically acceptable; many interviewed companies responded that they would ask for compensation if reliable data is to be elaborated. One way to address this trade-off between reliability and data quality is to focus MRV on these types of private finance that are internationally accepted as part of the USD 100 billion. Therefore, the next section will analyze the potential inclusion or exclusion of certain types of private finance in the USD 100 billion goal.

[30] While climate change impacts are assessed for "projects with potential significant adverse environmental impacts" according to OECD environmental guidelines (OECD, 2007) this assessment does not result in projects being marked as "climate-friendly" or not.

[31] At the moment, only renewable energies and sustainable water projects (water purification, waste water treatment) receive these favorable terms (OECD, 2009), while in the future further climate change mitigation" projects (e.g. CCS, waste-to-energy and some energy efficiency projects are considered at the moment) may be added.

Table 2: Best available MRV "systems" for private climate finance mobilized by Switzerland

Finance flows	**Data**	**Monitoring and reporting source**	**Outfl. Source Mobil.**	**Direct meas ?**	**Veri-fied ?**	**Room for improvements**
Carbon market payments compliance	Expenditure of "Climate Cent" / purchased CERs	Annual report / Swiss CO2 registry	*S*	*(✓)*	*(✓)*	Credit prices beyond Climate Cent not known
Carbon market payments voluntary	Credit payments	Annual reports of some offset providers	O	*(✓)*	*(✓)*	All providers, data on shares of Annex-1
Non-return oriented finance (outside carbon market)	Donations via Swiss development organ.	Annual reports; Swiss ODA report	O		✓	Definition of "climate change" / climate part to be separated
	Donations of companies	Annual reports	S		✓	
Payments for low-carbon products	Expenditures of large retailers	Annual reports	(S)			Definition of "low-carbon", share of products from developing countries
Foreign Direct Investments (FDI)	Swiss FDI	SNB statistics	O		✓	Climate-part to be separated (company basis?)
Investments mobilized by the *carbon market*	Investments of CDM projects	Project documents, compiled in URC database	M.	(✓)	✓	Allocation of investments to credits?
Investments mobilized by ODA	Private co-financing	GEF project documents, few DEZA / SECO docs	M.	✓		Common definition of "climate change" and "mobilization"; verification, project level data,
Investments mobilized by multilateral development banks	Swiss share of capital or contributions	Websites, Annual Reports	-		✓?	
	"Climate finance" of MDBs[32]	UN (2010b)	M.			
	Multilateral leverage factor	UN (2010b)	M.			
Investments mobilized by export insurance	"Insured" exports	Swiss Export Risk Insurance	M.		✓?	Climate-friendliness not assessed, only year of insurance policy known

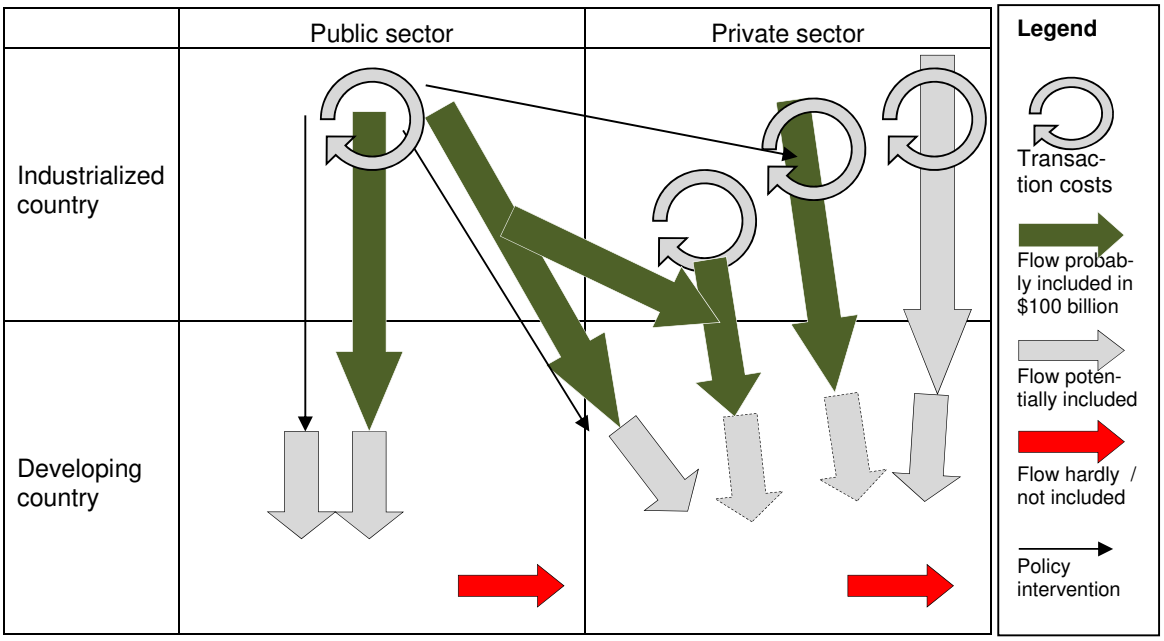
[32] As alternative to directly measuring MDB "climate finance" (=climate-related development expenditure), a leverage factor for "climate finance" to MDB equity could be used. This leverage factor ranges from 1.5-2 (IFC, AfDB) to 3 (IDB, ADB, IBRD), if equity is used for climate purposes, see UN (2010b: 7)

5. Overview of potential criteria for inclusion in the USD 100 billion

This section provides an overview of potential criteria on which private sector contributions may be accounted towards the "goal of mobilizing jointly USD 100 billion per year by 2020 to address the needs of developing countries" (UNFCCC, 2010)." We will analyze criteria both in general and in terms of national delineation ("Swiss flows").

Figure 3 summarizes the types of flows that may be included or excluded from the USD 100 billion. This figure will serve as guideline to show the implications of different criteria.

Figure 3: Potential flows included in the USD 100 billion



Source: Adapted version of figure in Whitley (2012)

5.1 Criteria for flows in general

The following list of criteria is mainly based on Stadelmann et al. (2011a), which is still relevant as the decision on long-term finance in Durban (UNFCCC, 2011a) does not introduce new wording. Nevertheless, we refined the analysis and included positions of some countries.

5.1.1 "Mobilized [jointly] by industrialized countries"

This is the wording found in all relevant negotiation text, the Copenhagen Accord (UNFCCC, 2009), the Cancun Agreements (UNFCCC, 2010), and the Durban LCA decision (UNFCCC, 2011a). It certainly implies that finance, on which developing countries have no direct influence (e.g. business-as-usual investment flows in developing countries, marked with a red arrow in Figure 3), are not part of the USD 100 billion. Apart from this, there is a lot of uncertainty.

The single most important question is: who are the actors in "industrialized countries"? There are two potential sub-definitions;

- Mobilized by public and private sector in industrialized countries: This definition includes all organizations, companies and governmental institutions in industrialized countries

- Mobilized by governments in industrialized countries: This definition is the one proposed by the Dutch government, who refers to finance "mobilized through developed country public interventions in the form of fiscal instruments and program including fiscal measures, the carbon market, ODA and OOF" (Loozekoot, 2012). It also corresponds to the criteria "additionality – state action needed", set up by Griesshaber (2012). The idea behind this definition is that only governments negotiating in UNFCCC negotiations can be hold responsible for their actions. In such a definition, North-South private flows on which industrialized governments have no influence (far right arrow in Figure 3) would not be counted towards the USD 100 billion goal.

Another question is: How directly must the mobilized finance be related to actors in industrialized countries? We have three potential definitions;

- Directly or indirectly mobilized by industrialized countries: In this version, all flows, excluding the red ones are included.
- Directly mobilized by industrialized countries: Under this criterion, the finance has to be directly mobilized by industrialized country action. If only governments are seen as "mobilizing", then finance mobilized via the industrialized countries' private sector (arrows with dashed lines are not included).
- Direct North-South flows: in this version only the arrows crossing the North-South barrier are counted. The idea that the USD 100 billion consists of finance crossing North-South boundaries is reflected in the wording "International private investment flows" used in the UN high-level panel on climate change financing report (2010a: 18).

5.1.2 "Addressing the needs of developing countries"

This is the second criterion contained in all negotiation texts (UNFCCC, 2009, 2010, 2011b) but what are the "needs" of developing countries? While it seems clear that the finance has somehow to be related to the financial needs to mitigate and adapt to climate change, two questions arise.

The first question is if developing countries only need finance to cover "net" costs of adaptation and mitigation actions, or if they also need further investment finance to cope with imperfect capital markets[33]. The two potential definitions are;

- All finance (=Gross flows): All finance contributing to climate change mitigation and adaptation: in this version, developing countries are assumed to both require cost-covering finance as well as investment flows to mitigate and adapt to climate change. This definition assumes that developing countries do not only face the challenge of covering higher costs of mitigation and adaptation interventions but also the challenge of imperfect capital markets (so lack of investment capital).
- Finance to cover "net" or incremental costs (=Net flows[34]) or more specifically: finance to cover incremental costs of mitigation actions (and full cost of adaptation actions)[35]. This criterion is essentially the same as the "net flow" criterion, mentioned in the UN high-level panel on climate change financing's report (2010a: 18)[36]. As financial resources provided by industrialized countries under the UNFCCC (1992) are not meant to cover the full costs of mitigation technologies (e.g. all investment costs of solar power) but only the agreed

[33] Distinguishing the two types of flows (finance covering net costs and general investment finance) would require to assess how much incremental costs are covered by the finance.

[34] While we see "net flows" generally as "net benefit for recipient countries", as suggested by the UN (2010a), "net flows" can also more specifically refer to FDI net inflow or net increase in liabilities (Stadelmann et al., 2011a; Grieshaber, 2012)

[35] In an earlier study (Stadelmann et al., 2011a) we have referred to this criterion as finance "addressing barriers", so only flows useful to address barriers (e.g. costs, risks, information, policy change, access to technologies) for low-carbon and climate-resilient development. We have transformed it to "finance to cover incremental costs" as "imperfect capital markets" can also be seen as barrier, so the distinction of "finance addressing barriers" and "gross flows" is not clear.

[36] The difference between "finance to cover incremental costs" and "net flows" is simply the perspective: the "incremental cost financing" looks at the needs of developing countries (covering costs of mitigation and adaptation), while net flows looks at what is actually flowing to developing countries if return expectations are discounted (this net flow can be used to cover costs of mitigation and adaptation).

incremental part (the difference between the business-as-usual and the low-carbon technology), one may argue that also in the context of the USD 100 billion, only incremental costs mobilized by the North are to be counted. In case of private investments, we would only count the "incremental" part of the investment, and only, if this incremental part is mobilized by industrialized countries, either through governmental incentives or lowered return expectations by the private sector. For most private investment flows, this incremental (or net flow) part would be zero.

The second question related to the needs of developing countries is whether industrialized countries' transaction costs for mobilizing finance (administrative costs in Northern agencies, such as identification and evaluation of opportunities, sourcing, transferring and monitoring financial flows, see yellow circles in Figure 3) are compatible with "needs of developing countries". There are two potential interpretations;

- Finance including transaction costs in industrialized countries: this interpretation assumes that mobilization of the USD 100 billion can only be achieved and the "needs" of developing countries can only be addressed if these transaction costs are covered.
- Finance excluding transaction costs in industrialized countries: this interpretation may be justified when considering "Northern" transaction costs as not being part of the "needs of developing countries"

5.1.3 Scaled-up, new and additional, predictable and adequate

Apart from the criteria "mobilized by industrialized countries" and "addressing the needs of developing countries" mentioned in the same sentence as the USD 100 billion, we may also look at other wording in the "finance section" of UNFCCC decisions. In the sentence before the USD 100 billion (UNFCCC, 2010), we find the wording of "scaled-up, new and additional, predictable and adequate" funding and "taking into account the urgent and immediate needs of developing countries that are particularly vulnerable to the adverse effects of climate change". We will shortly discuss these sentences.

"Scaled up": can be interpreted as "more than the current level", which is only a limiting criteria for including private finance, if total finance in 2020 is not higher than in 2009, the year when the USD 100 billion (Copenhagen Accord) were first mentioned. Assuming this is the case, we will not further discuss this wording.

"New and additional": while clearly referring to fast start finance, international agreements (Copenhagen, Cancun) leave open if also the USD 100 billion are to be "new and additional". The problem with "new and additional" is that it has never been properly defined and several potential definitions exist (Stadelmann et al., 2011c). In case of private finance, we have two simple interpretations;

- All private finance is "new and additional": this assessment is true if "new and additional" means "above current or future ODA" (see Gentry and Esty (1997)), "not counted towards 0.7% GNI used for ODA" or "above current or projected official climate finance". In all these cases, private finance is "new and additional" under the assumption that ODA or public climate finance is not lowered as consequence of increased private sector activity.
- Private finance beyond the existing level is "new and additional": this interpretation assumes that additional efforts are to be taken by the private sector beyond the level of 2009 / pre COP15, when the USD 100 billion were pledged (Nafo, 2012), One problem with this definition is that the private sector may substantially increase its financing from 2009 to 2020, even without any international or national climate policy efforts. There, one may ask whether "new and additional of private finance is better to be understood as "beyond the business-as-usal" level.

Predictable: Predictability can be defined as low variance of flows or a variance that can be explained by major external parameters (e.g. growth). The level of private investment has in the past years not varied more than ODA on a global level (Stadelmann et al., 2011c), so as long as ODA is not excluded

from the USD 100 billion or is becoming more predictable, predictability cannot be seen as criterion for excluding private finance.

Adequate: the interpretation of this criterion is unclear. We assume here that it refers to the "needs of developing countries", which has been discussed above.

Needs of […] countries that are particularly vulnerable to the adverse effects of climate change: This is not a limiting criterion if seen as overall criterion for long-term finance so some of the funds have to address the needs of particularly vulnerable countries. If it refers to each single flow, then it may be a limiting criterion as a very low share of private investment actually flows to LDCs, who can be seen as proxy for particularly vulnerable countries (Stadelmann et al., 2011c).

5.1.4 No double counting with industrialized countries' emission targets

This criterion would mean that the USD 100 billion should not include payments for emission reduction credits in developing countries that enable industrialized countries to fulfil their own emission targets pledged in the aftermath of the Copenhagen Accord. This criterion cannot directly be found in the negotiation text surrounding the USD 100 billion but there are several sentences in decision texts that indicate the use of such a criterion.

- First, the goal of USD 100 billion was a commitment by industrialized countries as part of a package including mitigation commitments by developing countries in Copenhagen: "in the context of meaningful mitigation actions and transparency on implementation (UNFCCC, 2009, 2010)". Such mitigation actions by developing countries, often termed "nationally appropriate mitigation actions" (NAMAs) had been agreed back in Bali, under the condition that industrialized countries provide financial and technological support (UNFCCC, 2008). Therefore, one may argue that these mitigation actions are own commitments of developing countries and not actions that help industrialized countries to fulfil their own commitments, as is the case for the CDM and new market-based mechanisms (UNFCCC, 2010).
- The second argument is that the Cancun Agreements suggest that market-based mechanisms are not the same as finance, they are seen as "complementing other means of support for nationally appropriate mitigation actions by developing country Parties" (UNFCCC, 2010), while finance can be seen as "other means".
- Third, UNFCCC (2011) says that market-based mechanisms are to "meet standards that […] avoid double counting of effort."

One counter argument against the "double counting" criterion is that no decisions explicitly exclude carbon markets from the USD 100 billion (UNFCCC, 2009, 2010).

Counting part of credit payments? One may argue that part of industrialized countries' payments for carbon credits goes beyond the abatement costs, so seeing these payments "beyond abatement costs" as part of the USD 100 billion would not imply double counting. As example, the UN (2010a) report mentioned the possibility of calculating infra-marginal rents, the difference between market prices and abatement costs, and counting them as "net flows" towards the USD 100 billion. Stadelmann (2011a) argues that "payments above the carbon market price" could be seen as flows beyond carbon offset costs and, therefore, as part of the USD 100 billion. Finally, the creation of new market-based mechanisms (e.g. sectoral trading and crediting) may offer opportunities to consider part of the credit payments as finance beyond "offsetting" because new market-based mechanisms are to provide "a net decrease and/or avoidance of global greenhouse gas emissions" (UNFCCC 2011). "Net decrease of emissions" means that emissions are reduced beyond the reductions counted towards industrialized countries' emission targets. Therefore, credit payments that enable the reduction beyond offsets would not imply double counting with targets.

The calculation of the share of credit payments that enables "net decrease of emissions" would depend on the method to assure the "net decrease of emissions";

- Discounting: If "net decrease of emissions" is to be achieved by "discounting" (Chung, 2007; Castro and Michaelowa, 2010), so only part of the emission reductions would count as offsets, then the credit payments could simply be multiplied by the share of emission reductions that are not counted ("discounted") as offsets, e.g. 40%, to reach the payments enabling a "net decrease of emissions", which would be part of the USD 100 billion. In fact, discounting already happens to a limited extent already today: 2% of all issued CDM credits are deducted as "share of proceeds" and the revenue of auctioning these credits is used as funding source of the Adaptation Fund. Therefore, these 2% share of proceeds are clearly to be seen as part of the USD 100 billion as they are not double-counted.
- Ambitious baselines / crediting threshold: if "net decrease of emissions" is to be achieved by setting an ambitious crediting baseline / threshold, which requires developing countries to take on own mitigation actions before they reach the crediting threshold (Schmidt et al., 2008; Ward et al., 2008), then the attribution to "net decrease of emissions" is more complicated. In a simple case, international public finance is used to help reaching the threshold and carbon offset finance to finance reductions beyond the threshold; in this case only public finance is used to reach the "net decrease of emissions" and will be part of the USD 100 billion. In a more complicated case, carbon offset payments are both used to reach the crediting threshold and reduce emissions beyond it; in this case, a complicated assessment of the cost of reaching the threshold and the share of each financing source (domestic, international public finance, international offsets) in covering the costs would be needed to attribute a specific part of offset payments to the "net decrease" and, therefore, to the USD 100 billion.

5.2 Analysis of criteria

In the following, we will only analyze criteria that would restrict the types of flows to be tracked / accounted for: mobilized by the public sector, finance to cover incremental costs, direct North-South flows, exclude transaction costs in North, "new and additional" beyond 2009 level and no double counting. We do not analyze criteria that imply the inclusion of all types of flows (e.g. gross flows, mobilized by public and private sector) or that have been found to be not relevant for including or excluding specific types of flows (adequate, scaled-up, predictable).

The criteria set out above can be analyzed with regards to their consistency with generic principles: Compliance with UNFCCC decisions, transparency, accountability and environmental integrity[37]. The first principle (Compliance with UNFCCC decisions) is the most relevant from a negotiation perspective, while two of the other principles (transparency, accountability) have been mentioned by a recent OECD paper on tracking private finance (Clapp et al., 2012). Finally, environmental integrity is a frequently used criterion under the UNFCCC, inter alia mentioned in the Marrakesh Accords (UNFCCC, 2001) to assure reliable accounting of emission units. The detailed principles are;

- Compliance with UNFCCC decisions: does the criterion improve compliance with recent decisions under the UNFCCC (Copenhagen, Cancun, and Durban)?
- Transparency: does the criterion improve transparency of achieving the USD 100 billion goal? Transparency may be improved because only flows are considered for which data is available and comparable.
- Accountability: does the criterion improve accountability of industrialized country governments? As governments are committed to the USD 100 billion, they are the only ones who can be held accountable for achieving this goal ("in the context of meaningful mitigation actions and transparency on implementation").
- Environmental integrity: does the criterion improve environmental integrity of the climate regime? "Environmental integrity" is understood here as the ability of the climate regime to measure efforts for achieving environmental goals with comparable units and achieve the set environmental goals, e.g. stabilization of the GHG concentration in the atmosphere

[37] We did not include other principles, such as "Common but Differentiated Responsibilities and Capabilities" and the "Right to Sustainable Development" as Parties have very different understandings on how to interpret them.

under the UNFCCC, emission reduction goals under the Kyoto Protocol and emission pledges under the Cancun Agreements.

In Table 3, we analyze which criteria improve or strengthen the four principles. "Compliance with UNFCCC decisions" is potentially strengthened by all criteria but none of the UNFCCC decision texts (Copenhagen, Cancun, and Durban) clearly implies that one of the criteria has to be applied. Transparency may be improved by applying "direct North-South" flows as criterion because the measurement point (national boundaries) becomes evident, and flows can both be measured by outflows and inflows. In all other cases, we do not see improvement in transparency, actually rather a possible decrease because the criterion requires data that is not available (e.g. transaction costs). Accountability of governments is clearly improved by only including finance mobilized by governmental interventions, as explained and defined above. Finally, environmental integrity is strengthened by, first, the criterion "no double counting", as emission reductions of supported NAMAs and acquisition of emission credits are not accounted for as reductions by industrialized countries, and, second, also by the criterion "finance to cover incremental costs", as incremental costs is the relevant part of finance for achieving environmental benefits and, thus, environmental integrity is improved when only comparing this environmentally relevant part. While all other criteria also increase the overall amount of finance, and thereby, move actions closer to environmental ambition, we do not see any direct link to "environmental integrity" as the finance excluded by these criteria (transaction costs, funding mobilized by the private sector and private finance up to the 2009 level) does also contribute to mitigation and adaptation. Summing up, when looking at these principles, the following four criteria should be more thoroughly considered: Mobilization by the public sector, finance to cover incremental costs, direct North-South flows, no double counting.

Table 3: Criteria for inclusion of flows in the USD 100 billion & general principles

Criteria for inclusion in the USD 100 billion *General principles*	Mobilized by governments	Finance to cover incremental costs	Direct North-South flows	No transaction costs in North	"New and additional" beyond 2009 level	No double counting
Compliance with UNFCCC decisions	(✓)	(✓)	(✓)	(✓)	(✓)	(✓)
Transparency			✓			
Accountability	✓					
Environmental integrity	(✓)	✓	(✓)	(✓)	(✓)	✓

✓: clearly strengthens the principle , (✓) may strengthen the principle

5.3 Criteria for attributing flows to "Switzerland"

Beside the question which criteria for including flows are to be chosen, further criteria are needed on how to attribute flows to specific industrialized countries, e.g. Switzerland. Three potential criteria for attributing flows (to Switzerland) would be the following;

- Mobilized by Switzerland: All private finance mobilized by Swiss entities (either the Swiss government or private organizations and companies[38]) would be attributed to Switzerland. The advantages of this definition are its closeness to the wording in UNFCCC documents and the attribution to the country where the effort has been taken place. The disadvantage is that

[38] Definitions of "Swiss companies" would be needed. For the interviews, we use the definition of "companies that are incorporated in Switzerland", as it is technically the simplest geographic allocation criteria. An alternative definition to define "Swiss companies" would be "companies where the majority is owned by Swiss citizens/residents" Such a ownership-related definition would be closest to decision power but MRV may be complicated if companies are owned by many persons

"mobilized finance" is difficult to measure and double counting may occur: two "mobilizing countries" may claim to mobilize the same private (or public) flows[39]. Therefore, enough detail has to be provided to avoid double counting, and in case of disagreement, the owner of "mobilized finance" may report by which country his flows have been triggered[40].

- "Outflow" from Switzerland: this second definition would mean that all finance flowing from Switzerland to developing countries would be attributed to Switzerland. The advantage is that the measurement is straightforward but the disadvantage is that the country to which the flow is attributed, may not be the same as the country that has undertaken an effort (e.g. a headquarter may decide to invest in low-carbon technologies but the actual outflow happens in a country where a subsidiary is based). Furthermore, transaction costs are not covered under this definition.

Table 4 summarizes the advantages and disadvantages of the different attribution criteria, considering the same principles as above. "Mobilized by Switzerland" is in closest compliance with UNFCCC wording and accountability of governments, while "outflows from Switzerland" is easiest to measure, and therefore, assures transparency best. For overall environmental integrity of the climate regime, the attribution criteria should not matter. Apart from these principles, we also assessed whether the attribution criteria enable accounting for transaction costs, which is not the case if "outflows" is the criterion. Furthermore, some attribution criteria are not applicable to all types of flows, e.g. "mobilized investments" can only be measured with the definition "mobilized by Switzerland". Summing up, the assessment clearly favours attribution according to the criterion "mobilized by Switzerland".

Table 4: Advantages and disadvantages of criteria for attributing flows to "Switzerland"

Attribution criteria ->	**Finance mobilized by Switzerland**	**Financial outflows from Switzerland**
Compliance with UNFCCC decisions	✓	
Transparency	(✓)	✓
Accountability (of governments)	✓	
Environmental integrity	?	?
Transaction costs are included	✓	
Applicability to all types of flows	✓	(✓) All except mobilized investments

[39] This can be shown for the case of multilateral climate finance, where GEF claims to leverage funding from implementing entities, while those rather see themselves as leveraging GEF funding.

[40] Our survey has shown that the owner of "mobilized finance" might in some case even argue that his financial flows have not been mobilized at all.

6. Potential use of criteria and implications

This section outlines the implications of using specific criteria for "private finance" on the types and the size of Swiss private flows that would be included in the USD 100 billion.

We will assess the four criteria for private climate finance flows that came out as most relevant from the analysis above[41];

- Mobilized by the public sector
- Finance that covers incremental costs
- North-South flows
- No double counting of emission reductions

Table 5 shows which flows are included for each of these criteria.

The first criterion, "mobilized by public sector", would exclude private donations (except donations mobilized by governmental agencies), voluntary carbon market payments (except payments by governmental sources) and Foreign Direct Investment (if mobilized by governments, it is included in mobilized investments).

If "finance has to cover incremental costs" (second criterion), we can only count carbon market payments, private donations and payments for products, while private investments are excluded as investors are assumed to expect returns at market rates and the potentially incremental part is covered by public agencies or the carbon market[42].

When using the third criterion, direct "North South flows", we would have to deduct transaction costs from carbon market and voluntary payments, and only a share of mobilized investments would be counted as investments in developing countries will also include in-country and South-South investments.

Finally, the criterion of "no double counting of emission reductions" excludes carbon market payments (both compliance and voluntary) and arguably also investments mobilized by carbon market payments, which can be seen as inherent part of achieving emission reductions. If all four criteria are used together, no private flow would be included in the USD 100 billion.

Clearly, excluding all private finance flows, was not the intention of the decision in the Cancun Agreements, as the USD 100 billion are set to come from public *and* private sources. Therefore, a political selection of criteria will be required.

[41] In all cases, we will use the criterion of "mobilized by Switzerland" to attribute funding to Switzerland as our analysis clearly suggests it is clearly the most favorable one.

[42] Part of private investments could be seen as "incremental", if companies expect lower returns than market rates because they see a value of climate change mitigation or adaptation. One example in Switzerland is the "Alternative Bank", which is lending to energy efficient housing and renewable energies at low interest rates (only in Switzerland). If such cases also exist for North-South investments, then the incremental part of investment could be calculated as proposed by the UN (2010a): return at market rates minus expected return of the investor.

Table 5: Implications of using 4 major criteria on the types of flows to be included in USD 100 billion

Criteria for inclusion in USD 100 billion *Financial Flows included*	Mobilized by governments	Finance to cover incremental costs	Direct North-South flows	No double counting
Carbon market payments				
*- compliance**	Included	Included	Included*	
- voluntary	(Included)	Included	Included*	
Donations (excl. carbon market)	(Included)	Included	Included*	Included
Payments for products*		Included	Included*	Included
Foreign Direct Investments			Included*	Included
Investments mobilized by				
- carbon markets (compliance)	Included		(Included)	(Included)
- carbon markets (voluntary)			(Included)	(Included)
- bilateral agencies	Included		(Included)	Included
- multilateral institutions	Included		(Included)	Included
- export insurances	Included			Included

Included = Included in the USD 100 billion, when applying the criterion in this row
Included* = Included flows but transaction costs in the North are excluded
(Included) = Part of the flows is included

Table 6 shows the impact of the total number of private finance that Switzerland can claim to mobilize if some of the criteria are used. We will use the top-down estimates for Foreign Direct Investments, investments mobilized by compliance carbon markets and multilateral institutions here, as a reliable bottom-up estimate has not been possible for these flows. For all other flows, we use the bottom numbers. The total figure of private finance mobilized by Switzerland drops from CHF 0.5-2.7 billion (all funding flows) to around CHF 0.3-2.3 billion if either "mobilized by the private sector" or "no double counting" is used as criterion. It even goes down to CHF 0.2-1.2 billion if "direct North-South flows" are used as criterion, and to less than CHF 0.1 billion if finance has to cover incremental costs. As explained above, the number drops to virtually zero if all criterion (or even just "mobilized by the public sector", "incremental costs" and "no double counting" together) are used.

Table 6: Implications of using 4 major criteria on the amount of Swiss funding (in CHF million)

Criteria for inclusion in $ 100 billion *Financial Flows*	Mobilized by govern-ments	Finance to cover inc-remental costs	Direct North-South flows	No double counting	*Criteria for Attribution to Switzerland*
Carbon market payments					*Mobilized*
*- compliance**	46	46	37-41*	1** *+ Costs above market price)*	*Mobilized*
- voluntary	<1	9-11	7-10*	9-11	*Mobilized*
Donations (excl. carbon market)	0***	>16-32	13-29*	>16-32	*Mobilized*
Payments for products*		n/a	n/a	n/a	*Mobilized*
Foreign Direct Investments			150-1100	150-1100	*Outflows*
Investments mobilized by					*Mobilized*
- carbon markets (compliance)	*~375-750*		(Part of FDI)		*Mobilized*
- carbon markets (voluntary)	<4		(Part of FDI)	>40	*Mobilized*
- bilateral agencies	*>28-32*		(Part of FDI)	*>28-32*	*Mobilized*
- multilateral institutions	*17-830*		(Part of FDI)	*17-830*	*Mobilized*
- export insurances	*50-590*			50-590	*Mobilized*
Total Swiss private funding using this criterion	**500-2200**	**<100**	**200-1200**	**300-2300**	

All figures are based on bottom-up estimates, except for FDI and investments mobilized by carbon market and multilateral institutions, where top-down estimates were used.
* We assumed that 10-20% of these payments do not flow North-South; this number is based on the roughly 10% of bilateral flows used for administration and other in-donor activities as share of bilateral assistance (OECD, 2012b) and the 10-20% overhead costs claimed by carbon offset and development organizations (Caritas, 2012; myclimate, 2012) .
** 2% share of proceeds not seen as "double counted"
*** DEZA requires that for receiving grants from DEZA NGOs have to provide at least as much co-finance. We assumed here that this co-finance consists of business-as-usual flows, so they are not triggered by DEZA.

7. Conclusions

This study explored private finance (mobilized by Switzerland) in the context of the goal of industrialized countries to mobilize jointly USD 100 billion per year by 2020 from public and private sources, to address the needs of developing countries in mitigating and adapting to climate change. The study had a particular focus on Switzerland as one of the industrialized countries that contributes to the mobilization of private finance. We estimated the current private climate finance flows mobilized by Switzerland, identified existing systems for measuring, reporting and verifying these flows, analyzed criteria to include or exclude some of the flows from counting as part of the USD 100 billion figure. Finally, we explored the implications of different criteria on the amount of Swiss private flows that can be accounted for as part of the USD 100 billion commitment.

In a first step, this study tried to estimate private finance mobilized by Switzerland that contributes to climate change mitigation and adaptation in developing countries. From global figures we derive that all private flows mobilized by Switzerland (public and private sector) together may amount to roughly CHF 0.5-2.7 billion per year. Based on 35 questionnaires and Swiss documents, we estimate at least 0.2-0.8 billion Swiss' mobilized private finance in 2011. However, substantial flows are missing in the latter figure, as part of foreign direct investments and investments mobilized by carbon markets and multilateral institutions are not included. Both figures are only first approximations, as they are either derived from global estimates or from national and firm-level data that is mostly non-verified. Unfortunately, accurate data on the largest flows (climate-related FDI outflows from Switzerland and private finance mobilized by public climate finance) is not available, so only a broad range of the potential size of flows could be estimated. A further challenge is that "climate finance" itself has never been defined on a global level, so we had to use ad-hoc assumptions on which financial flows contribute to climate change mitigation and/or adaptation. The estimation of financial flows has also shown that some activities of Swiss companies with benefits for developing countries are difficult to value (e.g. research & development, export of climate-friendly technologies, consulting, education and awareness raising), and, therefore, the private sector finance part in the biennial update report may also include some qualitative information on these activities.

In a second step, existing systems for measuring, reporting and verifying (MRV) private finance were analyzed. Only for two flows well-established MRV systems exist: for compliance carbon market payments (nowadays focused on one actor) and investments mobilized by carbon market payments (contained in verified project documents). However, carbon market payments may become more difficult to measure if more market players will buy compliance credits for the Swiss emission target. Building up reliable MRV systems for other flows may be burdensome, particularly for private sector companies. Therefore, it may be useful to wait for international decisions on which private flows are to be considered before building up costly MRV systems. Another strategy is to explore – nationally or internationally – whether politically acceptable (but not perfect) data quality can be achieved with some minimal efforts, in order to reduce transaction costs. Such a low-cost MRV strategy may be applied to the case of private finance mobilized by Swiss bilateral agencies, as such finance is to be reported in the biennial report in January 2014. For better understanding the Swiss private sector flows, an analysis of FDI by Swiss companies as well as a workshop with industry experts may be useful.

In a third step, potential criteria for including or excluding different types of flows from the USD 100 billion were discussed. Studying the negotiation documents, we derived several potential criteria, such as mobilized by governments, only including finance covering incremental costs, excluding transaction costs in the North, "new and additional", no double counting with other emission reduction claims, and only accounting direct North-South flows. Assuming that the principles of transparency, accountability, environmental integrity and the compliance with international agreements should be strengthened, we conclude that there are good arguments to consider at least the criteria of "mobilized by governments", "finance covering incremental costs", "no double counting with other emission reductions", and "direct North-South flows".

As last step, we looked at the implications of choosing one or several of these criteria on the amount of private finance mobilized by Switzerland. Only including finance mobilized by the Swiss government would reduce the number to approximately CHF 0.6-1.7 billion, mainly because FDI not mobilized by the Swiss government is excluded. If only finance covering incremental costs is counted, then the number drops to less than CHF 0.1 billion as only carbon market payments and voluntary donations are included. Direct North-South flows leads to a figure of approximately CHF 0.2-1.2 billion, while "no double counting" implies exclusion of carbon market payments and related investment flows, so the remaining flow is approximately CHF 0.3-2.1 billion per year. Using all criteria together means that hardly any flows are to be included, except potentially carbon market payments above the market price, private donations mobilized by public agencies and carbon market payments not used for compliance but mobilized by the Swiss government.

What are potential further steps related to the issue of MRV and accounting of climate private finance?

1) Clarifying the Swiss (proposal for a) definition of "climate-friendly private finance": this document has set out potential private finance flows that can be seen as "mobilized by Switzerland". It has also analyzed criteria to decide which flows are included or not. However, this document does not result in a definition, as this is inherently a political decision – both at the international level (negotiations, see below) and the national level (position in the negotiations, interim definition as long as no international agreement is available).
2) Agreeing on international definitions for "private climate finance": Swiss private climate finance data will only become meaningful if it receives international recognition. Therefore, an international agreement on the definition of "private climate finance" (or "private finance to be seen as part of the USD 100 billion") is needed. This definition will have to address two questions: which flows are part of "private finance" and which of the selected flows are to be seen as "climate-friendly" (addressing the climate change mitigation and adaptation needs of developing countries). The second definitional question ("climate-friendly") applies to public sector flows as well, and may be based on the OECD definition of the Rio marker. Given the experience of Swiss development agencies (SECO and DEZA) with the current Rio marker, it may be desirable to have not only a generic definition of "climate change mitigation and adaptation" as is currently the case for OECD Rio markers but to agree on a list of eligible technologies/project types. Different fora could be envisaged to start technical discussions on the topic: inter alia informal group of interested countries, SBSTA or the Standing Committee.
3) Improving data availability and quality: the analysis has shown that data availability and quality for almost any type of flow has to be improved in order to provide reliable figures. As the setting-up of MRV systems may imply substantial costs for companies and public agencies, it is recommendable to only set up such MRV systems (even for a preliminary test period) once there will be greater clarity at international level about which flows to include in the 2020 finance target. In the intermediate, Switzerland may focus on the flows that are to be included in the 2014 biennial report: private finance mobilized by governmental agencies. For private finance mobilized via multilateral finance, Switzerland may initiate or support international discussions, including experts from interested governments, relevant international organizations, NGOs and the private sector, to find internationally acceptable ways of measuring private finance mobilized by multilateral and bilateral agencies.

Finally, MRV is just one of two key questions in relation to private finance as part of long-term climate finance. The second, and for the climate regime the most important question is how to mobilize private finance for climate change mitigation and adaptation in developing countries. The questionnaires revealed that not only finance and incentives in the North but even more policy incentives as well as economic and legal stability in the South would help to increase private finance addressing climate change mitigation and adaptation in the South. In this regard, policy makers will have to analyze and strengthen not only international climate policy but also, or even more, enabling environments in developing countries, particularly the adoption of climate policies at the national level.

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9. Annex

9.1 Questionnaire sent to private companies and organizations (English version)

Questionnaire "Private finance for climate change protection in developing/emerging countries", 2011

Name of company / organisation

Contact person Name:

Tel

Instructions

- Please consider all your financial means that contribute to greenhouse gas (emission) reductions (e.g. renewable energy, reducing deforestation, CO_2 capture and storage) and / or adaptation to climate change (e.g. improved weather data, insurances, coastal protection, improved water and food security) in developing and emerging countries.
- Please use a wide definition of finance / financial means. Climate-friendly finance can contribute to the following measures contributing to climate change mitigation and/or adaptation
    - Technology-related measures and investments (e.g. production and installation of solar plants)
    - Research and Development of technologies used in developing countries
    - Education and formation in developing/emerging countries
    - Planning and consulting
    - Purchase of climate-friendly products
- Financial means are also climate-friendly if they are not invested primarily because of climate change but if they are nevertheless contributing to greenhouse gas (emission) reductions and / or adaptation to climate change
- In case of uncertainty you find the most important terms in the annex.

1) How much finance did you spend for climate protection in developing/emerging countries in the year 2011?

Type of private finance	*Estimated amount*	
☐ Equity (gross/net)	ca	CHF Million
☐ Loans (gross/net)	ca	CHF Million
☐ Finance w/o return expectations	ca	CHF Million
☐ Payments for carbon credits	ca	CHF Million
☐ Payments for other products	ca	CHF Million
☐ Other finance	ca	CHF Million

2) Did you channel part of the financial means via another organization or company in industrialized countries?

☐ Yes ☐ No
If yes, which share was channeled via a Swiss company / organization? ca %
If yes, which share was channeled via a company / org, in another industrialized country? ca. %

3) Do all your financial means originate from the Swiss private sector (private donors, investors, carbon credit buyers in Switzerland)?

☐ Yes ☐ No
If no, which share does originate from the Swiss government? ca %
If no, which share does originate from other governments? ca %
If no, which share does originate from the private sector abroad? ca %

4) Did your financial means leverage further climate-friendly investments (outside your organization or company)?

☐ Yes ☐ No
If yes, how much climate-friendly investments were leveraged? CHF Million

5) Which share of the financial means did contribute to greenhouse gas (emission) reductions and adaptation to climate change?

ca % for greenhouse gas (emission) reductions ca % for adaptation ca % for both

6) Were part of the financial means triggered by the Swiss government (e.g. via subsidies, export promotion, emission trading, obligations, incentives)?

☐ Yes ☐ No
If yes, which share was triggered by the Swiss government: ca. %

7) Is it possible to improve the data quality of the mentioned financial means to the level "reliable" (max. +/-10% uncertainty)?

Quality already given	Yes, it is possible	Possible, if compensation	Not possible
☐	☐	☐	☐

8) In which areas did you primarily use your financial means?

Sector	*Technology/ Area*	*Type of intervention*
☐ Power plants	☐ Renewable Energies	☐ Hardware production (e.g. engines)
☐ Buildings / households	☐ Energy efficiency	☐ Hardware installation (e.g. solar power)
☐ Industry	☐ Afforestation / REDD	☐ Consulting
☐ Agriculture	☐ Recycling	☐ Planning
☐ Forestry	☐ Waste water treatment	☐ Education / formation
☐ Waste	☐ Information technology	☐ Insurances
☐ Transport	☐	☐ Research & Development
☐	☐	☐

Details:

9) Do you plan to upscale your financial means with climate benefits in developing countries in the next few years?

☐ Yes ☐ No, same means ☐ No, lower means

10) In which cases would you increase your financial means?

	Influence very small	*small*	*medium*	*strong*	*very str.*
More donations / contracts	☐	☐	☐	☐	☐
Governmental support in industrialized countries	☐	☐	☐	☐	☐
Economic growth in industrialized countries	☐	☐	☐	☐	☐
Export risk guarantees in industrialized countries	☐	☐	☐	☐	☐
Higher carbon price (emission trading)	☐	☐	☐	☐	☐
Governmental support in developing countries	☐	☐	☐	☐	☐
Improved rule of law in developing countries	☐	☐	☐	☐	☐
Political stability in developing countries	☐	☐	☐	☐	☐
Economic growth in developing countries	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐

11) Would you be ready, in relation to these financial means (mobilization / measurement), …

… to have a thorough conversation? ☐ Yes ☐ No
… to participate in a half-day workshop ☐ Yes ☐ No

12) Do you have any further comments or suggestions (e.g. data quality, problems when estimating these flows, differences to other years, unclear definitions, other contributions to climate change)?

Thanks a lot for filling and returning this form to;

martin.stadelmann@pw.uzh.ch
or
Universität Zürich, Institut für Politikwissenschaft
z. H. Martin Stadelmann
Affolternstrasse 56
CH-8050 Zürich

Appendix: definitions of the most important terms

Industrialized countries	OECD countries without Chile, Israel, Mexico, South Korea.
Developing / emerging countries	Non-European countries not belonging to the OECD + Chile, Israel, Mexico, South Korea.
Equity	Equity finance (incl. mezzanine financing) that contributes to climate protection in developing/emerging countries, e.g. new companies, buying shares of existing companies. Also investments in Research & Development if the products are to be used in developing countries (only count part of R&D investment if the products are only partly used in developing countries). If possible display both the gross and the net (new equity – disinvestments) value.
Loans	Loan finance contributing to climate protection in developing/emerging countries. If possible display both the gross and the net (new loans – repayments) value.
Finance w/o return expectations	Financial means of companies, foundations and associations with no or lower return expectations. Payments for carbon credits are not included here.
Payments for carbon credits	Payments for carbon credits, either on a voluntary basis or because of obligations towards the government
Payments for other products	Payments for products that cause less greenhouse gas emissions during their production and transportation compared to similar products (e.g. renewable electricity)

9.1 Questionnaire sent to Swiss governmental agencies (German version)

„Fragebogen zu privaten Finanzmitteln 2011 für den Klimaschutz in Entwicklungs- und Schwellenländern“

Name der öffentlichen Stelle

Ansprechspartner,	Name:
	Email:
	Tel:

Definitionen

climate-relevant climate-specific	Projekte mit Rio-Marker 1 (climate change as "significant objective") Projekte mit Rio-Marker 2 (climate change as "principal objective")
Entwicklungs- & Schwellenländer	Alle ODA-eligible countries (siehe http://www.oecd.org/dataoecd/9/50/48858205.pdf) + Israel & Südkorea
Investitionen (brutto/netto)	Kapitalanlagen, die zum Klimaschutz in Entwicklungs- und Schwellenländern beitragen, z.B. Gründung neuer Firmen, Aufstockung des Aktienkapitals oder Beteiligung an Firmen (auch via Kauf von öffentlich gehandelten Aktien). Wenn möglich ist neben dem Brutto- auch der Nettobetrag (Investitionen - De-Investitionen) anzugeben
Bilaterale EZA	Bilaterale Entwicklungszusammenarbeit,
Multilaterale EZA	Multilaterale Entwicklungszusammenarbeit, inkl. Multi-Bi (Gelder über Trust Funds bei multilateralen Organisationen / Banken).

1) Welche Geldmittel haben Sie <u>im Jahre 2011</u> für klimafreundliche Massnahmen in Entwicklungs- und Schwellenländer aufgewendet?

Typ an Finanzmitteln	*Mio. CHF für mitigation* *1 USD =0.94 CHF*	*Mio. CHF für adaptation* *1 USD =0.94 CHF*	*Datenqualität* SCH=Schätzung INT = Intern, aber verlässlich VER = Extern verifiziert
Bilaterale EZA „climate-relevant“			☐ SCH ☐ INT ☐ VER
Bilaterale EZA „climate-specific“			☐ SCH ☐ INT ☐ VER
Multilaterale EZA „climate-relev.“			☐ SCH ☐ INT ☐ VER
Multilaterale EZA „climate-spec.“			☐ SCH ☐ INT ☐ VER

2) Welcher Anteil der aufgeführten Finanzmittel wurden <u>via eine andere Schweizer Firma oder Organisation</u> in Entwicklungs- und Schwellenländer eingesetzt?

Typ an Finanzmitteln	*% via Schweizer Firma/NGO*	*Datenqualität*
Bilaterale EZA „climate-relevant“	%	☐ SCH ☐ INT ☐ VER
Bilaterale EZA „climate-specific“	%	☐ SCH ☐ INT ☐ VER

3) Welche privaten Investitionen / Kredite wurden durch diese Finanzmittel ausgelöst?

Typ an Finanzmitteln	*Ausgelöste Investitionen*	*Datenqualität*
Investitionen / Kredite ausgelöst durch…		
Bilaterale EZA „climate-relevant“	Mio. CHF	☐ SCH ☐ INT ☐ VER
Bilaterale EZA „climate-specific“	Mio. CHF	☐ SCH ☐ INT ☐ VER

4) Wie gross schätzen Sie den Aufwand, die Datenqualität auf die Stufe „verlässlich“ (max. +/-10% Unsicherheit) zu verbessern?

	Qualität schon gegeben	Intern möglich	Möglich, wenn entschädigt	Nicht möglich
Private Investitionen, ausgelöst durch bilaterale EZA	☐	☐	☐	☐

Danke vielmals für das Ausfüllen und Retournieren bis 15. April an: martin.stadelmann@pw.uzh.ch